

Appln. No.: 10/779,900
Amendment Dated October 6, 2006
Reply to Office Action of June 9, 2006

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Amendments to the Claims: This listing of claims will replace all prior versions, and listings, of claims in the application

Listing of Claims:

1. (Currently Amended) A method of displacing a mobile magnetic plate of an Electromechanical ~~electromechanical~~ valve actuator for internal combustion engines from a second position to a first position, said electromechanical valve actuator comprising:

a first polarized electromagnet and a second, ~~equipped with a polarized~~ electromagnet, each polarized electromagnet including a magnet,

and with a mobile magnetic plate positioned between the electromagnets and configured for switching between a first position close to the first electromagnet and a second position remote from the close to the second electromagnet,

the switching times between these first position and the second positions being determined depending on the operating state of the engine,

said method of displacing the mobile magnetic plate from the second position to the first position comprising the steps of:

comprising means for supplying the first electromagnet with a variable attracting current, wherein the variable attracting current increases progressively to a peak value in the course of the approach of the plate to the first electromagnet, and the variable attracting current is immediately decreased after the peak value is achieved, and is decreasing when the magnetic plate contacts the first electromagnet, and

supplying the second electromagnet with a second current generating a magnetic field opposite to the magnetic field of the magnet of the second electromagnet in order to temporarily demagnetize the magnet of the second electromagnet, the second current being of an intensity lower than or equal to the intensity of the magnetic field generated by the magnet of the second electromagnet, wherein the second current is generated at least until the mobile magnetic plate has traveled about one-half of the distance separating the first electromagnet from the second electromagnet.

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2. (Currently Amended) ~~Actuator in accordance with~~ The method of claim 1, wherein ~~the means for supplying the electromagnet with the variable attracting current includes~~ further comprising a step of means for reducing the first attracting current as the plate is approaching the first electromagnet.

3. (Currently Amended) ~~Actuator in accordance with~~ The method of claim 1 or 2, wherein ~~the means for supplying the electromagnet with the variable attracting current includes~~ further comprising a step of means for inverting the direction of the current supplying the first electromagnet when the plate switches to the second position.

4. (Currently Amended) ~~Actuator in accordance with~~ The method of claim 3, wherein ~~the means for supplying the electromagnet with the variable attracting current includes~~ further comprising a step of means for controlling a current that is generating a magnetic field of an intensity lower than or equal to the intensity of the magnetic field generated by a the magnet of the first electromagnet when the current is inverted.

5. (Currently Amended) ~~Actuator in accordance with~~ The method of claim 1 or 2, wherein the mobile magnetic plate moves into the vicinity of ~~a the~~ second electromagnet in its second position and the method actuator further comprises ~~means for a step of~~ simultaneously controlling the current supplies for the first electromagnet and the second electromagnet.

6. (Currently Amended) ~~Actuator in accordance with~~ The method of claim 1 or 2, wherein ~~the each~~ electromagnet is equipped with an E-shaped support having three branches, and ~~includes a the~~ magnet of each electromagnet is located at the end of one of the branches of the support opposite in relation to the mobile magnetic plate.

7. (Currently Amended) ~~Actuator in accordance with~~ The method of claim 1 or 2, wherein ~~the variations in the currents~~ are related to one of an amplitude and a duration of supply of the currents.

8. (Currently Amended) ~~Actuator in accordance with~~ The method of claim 1 or 2, further comprising ~~means for a step of~~ adjusting the variable attracting current responsive to the speed of the engine to be a parameter of the operating state of the engine.

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9. (Previously Presented) Internal combustion engine equipped with an actuator comprising a polarized electromagnet and a magnetic plate switching between a first position close to the electromagnet and a second position, characterized in that the actuator is configured to operate ~~is according to the method of~~ claim 1 or 2.

10. (Cancelled)